PATENT SPECIFICATION

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PROVISIONAL SPECIFICATION.

Improvements in Junction Boxes for Electric Wiring Systems.

We, STANLEY JAMES BRYCE, of 75, The Avenue, Leigh, Lancashire, WILLIAM REUBEN CLEMENTS, of 16, Hartington Road, St. Margarets-on-Thames, Middlesex, HAROLD LEICESTER, of West End View, Helsby, Nr. Warrington, ALFRED ERNEST WATSON, of 48, Bartholomew Road, London, N.W. 5, and JOHN HAMILTON ROBERTS, of Imperial House, Kingsway, London, W.C. 2, all British Subjects, do hereby declare the nature of this invention to be as follows:—

This invention relates to junction boxes and more particularly to those employed in house-wiring systems, although the invention is not necessarily limited thereto. In boxes of this kind it is common practice to secure the cables in position in the box by means of clamping screws which are screwed into contact with the cables. According to the present invention a clamping screw is adapted to clamp a conductor in position and at the same time to bring the cover and base of the box into frictional engagement and prevent their relative movement.

Some forms of the invention will now be described merely as examples in greater detail. In one form of construction, the base is rectangular in shape and formed with openings at opposite ends for the entry of the ends of two cables to be joined together by means of a porcelain connecting member of any convenient design. The depth of the openings in the opposite walls of the base is somewhat greater than the thickness of the cables to be used. The walls of the base in which the openings are formed and another wall are formed with overhanging lips and the corresponding walls of the cover are formed with inturned flanges so that when the cover is pushed on over the base, the inturned flanges on the cover ride over the lips on the base and guide the cover as it is being placed in position. The remaining wall of the base projects upwardly beyond the other walls and serves to locate the cover in its correct position on the base, a downwardly turned flange upon the wall entering a groove formed in the top of the cover. This upwardly projecting wall of the base also serves as a fourth wall for the cover. Mushroom-tailed screws pass through threaded bosses formed on the cover, these screws being located in suitable positions so that when screwed down with the cover in position, they press firmly on to the cables at the points where they enter the openings formed in the walls of the base. These openings may be brought to the desired width according to the cables being used by removing portions of the walls, these having been previously cut through to form a series of strips. When the screws are tightened down upon their respective cables, the flanges upon the cover are forced into contact with the lips on the base so that the screws serve the dual purpose of holding the cables in position against the base and securing together the base and the cover. That part of the screw which engages with the cable is conical in shape and is permitted a certain amount of play upon the screw shank. The object of this is to provide good clamping by allowing the cone to rock slightly. This is of advantage particularly when two cables are being clamped by the same screw.

In another form of construction for use as a tee junction box, three openings are provided in the base which is substantially semi-circular in shape, the lip being formed in the curved portion. The cover is the same shape as the base and is formed with an inwardly turned flange as before except at the points of entry of the cables. These portions of the cover are straight to correspond with similarly shaped portions of the base. The back wall of the base is straight and extends above the curved portion of the base and forms a back wall to the cover when this latter is placed in position. In this construction, the cover is placed over the base and then pushed forward only a relatively small amount until further movement is prevented by the back wall of the base. When in this position, the screws are over their respective cables and the flange on the cover engages with the underside of the lip on the base. On tightening down the screws on to their respective cables the flange and lip are

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forced into tight contact with each other as before.

In a further form of the invention suitable for a junction box with four entries, the base and cover are both circular in shape. The base is formed with a lip except at the points of entry as before but the cover is formed with four separate inturned flanges, the distance between adjacent flanges being slightly greater than the length of the lip on the base between adjacent points of entry for the cables. When it is desired to fasten the cover on to the base, the unflanged portions of the cover are placed down over the lip portions on the base and the cover then rotated until the screws are in position over their respective cables. The screws can then be tightened down as before. To ensure correct positioning of the screws before tightening down, small tongues on the circular wall of the base may be provided, one of these preventing rotation of the cover except in one direction, while the other serves as a stop to limit this amount of rotation. The porcelain connectors are not fastened to the junction box but are maintained in position in the base merely by the stiffness of the cables. The invention is particularly useful in connection with junction boxes employed for joining together lead covered cables such as are used in house wiring systems.

It will be understood that the terms "cover" and "base" in the above description have been used merely to assist in the understanding of the invention and that the invention includes those cases where the functions of these two members are reversed. For example, it is obvious that the cover might be formed with a lip for engagement by an inwardly turned flange on the base and that other modifications of a similar nature may be made without departing from the scope of the invention.

Dated the 24th day of April, 1929.
R. L. CLEAVER,
Agent for the Applicants,
Imperial House, Kingsway, W.C. 2.

COMPLETE SPECIFICATION.

Improvements in Junction Boxes for Electric Wiring Systems.

We, STANLEY JAMES BRYCE, of 75, The Avenue, Leigh, Lancashire, WILLIAM REUBEN CLEMENTS, formerly of 16, Hartington Road, St. Margarets-on-Thames, Middlesex, and now of 7, West Park Avenue, Kew Gardens, Surrey, HAROLD LEICESTER, of West End View, Helsby, Nr. Warrington, ALFRED ERNEST WATSON, of 48, Bartholomew Road, London, N.W. 5, and JOHN HAMILTON ROBERTS, of Imperial House, Kingsway, London, W.C. 2, all British Subjects, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to junction boxes and more particularly to those employed in house-wiring systems, although the invention is not necessarily limited thereto. In boxes of this kind it is common practice to secure the cables in position in the box by means of clamps which are screwed into contact with the cables. According to the present invention a clamping screw is adapted to clamp a cable or cables in position by exerting pressure upon the cable or cables, the clamping action serving to force the cover and base portion of the box apart and thereby bring these members into frictional engagement with each other to prevent their relative movement. For this purpose, the cover may have a lip provided with a number of flanges which are adapted to be slid over one or more lips formed on the base portion of the box, so that when a clamping screw passing through the cover is screwed down into contact with a cable passing into the box, the flanges and lips are forced into frictional contact with each other and the cover and base portion of the box securely held together.

Two forms of construction in accordance with the invention are illustrated as examples in the accompanying drawings, wherein:—

Figs. 1 and 2 are perspective views showing the inside of the cover and base portion respectively, of a circular junction box and

Figs. 3 and 4 are corresponding views of the cover and base portion respectively, of a rectangular box.

Referring first of all to Figs. 1 and 2, the base 1 of the box has a vertical wall 2, portions of which can be bent down on to the base 1 in order to provide entries as shown at 3 for cables 4. The cables are sheathed with lead and the ends are connected together in the required manner by means of connectors 5. In the present example the junction box is shown as

accommodating four cables and the wall 2 is divided into a corresponding number of portions 6. Each portion has a lip 7 which is bent outwards. The cover 8 has a wall 9 which has an outwardly turned lip 10 and this latter is provided with a number of inwardly turned flanges 11 for engagement with the lips 7 on the base portion of the box. The cover 8 has bosses 12 to accommodate mushroom tailed screws 13. The tails 14 are conical in shape and have a small amount of rocking motion upon the shanks of the screws 13. After the appropriate connections have been made between the cables to be joined together, the cover 8 may be placed upon the base portion with the unflanged parts 15 of the lip 10 resting on the lips 7, the distance between the adjacent flanges 11 being somewhat greater than the length of the lips 7. The cover 8 may then be rotated so as to cause the lips 11 to ride over the lips 7. The screws 13 may then be screwed down from the outside of the box so as to cause the tails 14 to bear upon the cables 4. When this occurs the lips 7 and flanges 11 are brought into frictional engagement with each other. It will thus be seen that the screws 13 serve the dual purpose of clamping the cables on to the base 1 of the box and also of securing together the cover and the base portion of the box. Tongues 16 are provided on the portions 6 of the wall 2 to serve as stops for the cover 8. When the flanges 11 come into contact with the tongues 16, the screws 13 are in their correct positions over the cables and ready to be screwed down into contact with them. The rocking motion permitted to the tails 14 of the screws enables a good clamping effect to be obtained when a single screw is used to clamp a pair of cables disposed side by side in the spaces 3. The wall 2 of the base portion may have a number of strips 17 which are cut through at 18[1]. These strips are bent inwards or removed to provide the entries for the cables, a larger or smaller number of strips being bent inwards or removed according to the number of cables to be accommodated. The base 1 of the box may be secured to any suitable surface by means of screws or nails passed through holes 18 in the base.

Figs. 3 and 4 show a rectangular box having entries for cables in two opposite walls. The base portion has a front wall 19 and side walls 20 and these are provided with an outwardly turned lip 21. The rear wall 22 is extended as shown beyond the height of the rest of the box. The cover 23 has a front wall 24 and side walls 25, these walls having an outwardly turned lip 26, the latter being formed with inwardly turned flanges 27. After the cables have been connected together the cover is slid on over the base portion when the flanges 27 ride over the lip 21, the rear wall 22 serving as a stop to locate the screws 13 in their proper position over the cables and also constituting the fourth wall of the cover 23. When the screws 13 are brought into contact with the cables, the lip 21 and flanges 27 are brought into frictional contact with each other so that the cover and base are secured firmly together. The rear wall 22 may have an inwardly turned flange 28, the edge 29 of which is turned down and engaged in a recess 30 formed in the cover 23. Where the entries 3 are intended to accommodate only one cable the tails 31 of the screws 13 may as shown have flat contact surfaces and be rigid with the screw shanks.

The invention is not limited to the precise details of construction as described but may be modified in various ways, for example, the lips upon the base portion of the box may be turned inwards and engage with outwardly turned flanges upon the cover of the box. The method of clamping may also be used in tee and other shaped boxes. The invention is particularly useful in connection with junction boxes employed for joining together lead covered cables such as are used in house wiring systems, the screws serving to bond the sheaths of the cables together.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A junction box having a clamping screw adapted to clamp a cable or cables in position by exerting pressure upon the cable or cables wherein the clamping action serves to force the cover and base portion of the box apart and thereby bring these members into frictional engagement with each other to prevent their relative movement.

2. A junction box having a screw or screws adapted both to clamp cables to be joined together to the base of the box and to secure together the cover and base of the box, the cover and base having flanges which can be slid over one another and caused to engage with each other when the screws are brought into contact with the cables.

3. A junction box constructed and adapted to operate substantially as described in connection with Figs. 1 and 2 or Figs. 3 and 4 of the drawings.

Dated this 17th day of January, 1930.

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Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.—1930.

[This Drawing is a reproduction of the Original on a reduced scale]

Fig. 1.

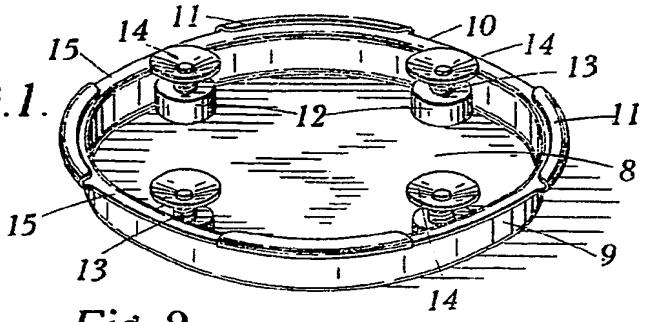


Fig. 2.

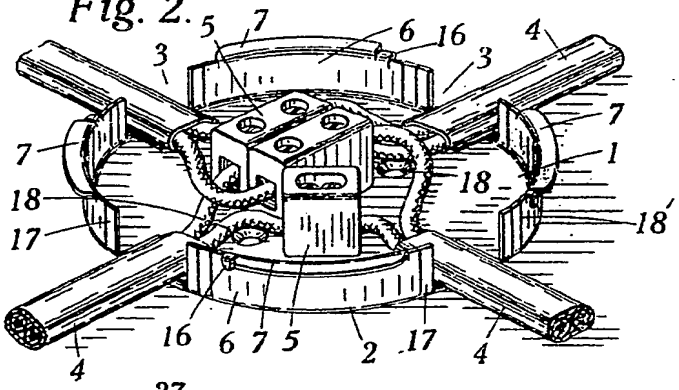


Fig. 3.

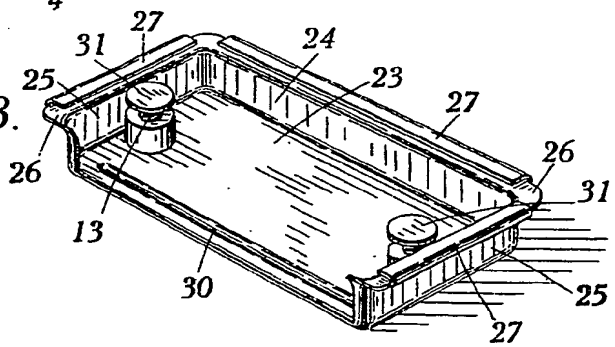
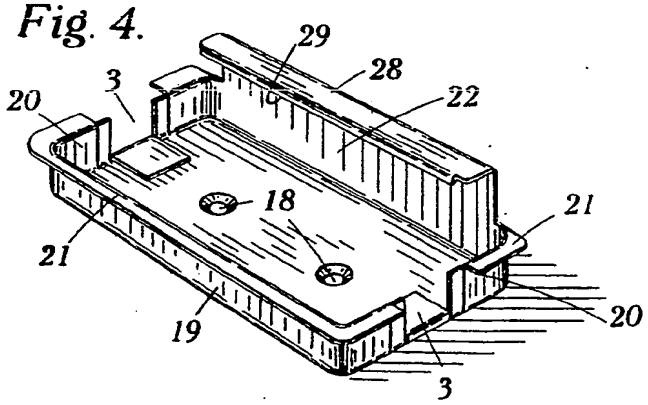


Fig. 4.



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